

and converted into fire-wood. Finding them both in trunk and twig much perforated by the burrows of insects, he kindly sent me some small bundles of twigs and branches of $\frac{3}{4}$ inch diameter and less, which I placed in boxes, and occasionally moistened.

Most of the Coleoptera mentioned in the subjoined list were hatched from these twigs, but I have added to those developed in my library the names of some others previously known to me as infesting the same tree; these are marked with an asterisk.

The size of this list, numbering 24 species, several of which are rarely found by collectors, and two of which are still undescribed, indicates the large addition to our knowledge of forest pests which may be made by very simple means.

My object in publishing it is to excite some interest among students to pursue this easy method of adding to their collections, and, at the same time, of furnishing information which will soon be of use. I am also not without hope that the Commission employed by the Government to devise means for protecting the forestry of the country may be induced to furnish to scientific men not thus employed, specimens which may lead to the identification of the tree parasites. Such identification of species is, of course, a pre-requisite for the devising of rational means for repressing the injuries done by these insects.

I addressed the Club briefly on this subject last year, and I am glad that what I then said has been supplemented by some practical instructions from Mr. C. G. Siewers,* Newport, Ky., indicating convenient methods of making these observations.

Though I have not yet received any lists of species thus obtained from our forest trees, and but few specimens for determination, I cannot believe that in a country so eminently given to 'practical' pursuits, the importance of this subject will continue to remain unrecognized. I hope that by the time the Commission on Forestry, ap-

ended to the Department of Agriculture, is ready to make a final report, some competent person, albeit not receiving government recognition in an official capacity, may be prepared voluntarily to furnish a list of forest insect-pests.

Without such an appendix, any report made by that Commission will be conspicuously imperfect; the list should contain the names of at least the most easily collected and most destructive parasites of each one of our valuable forest trees, with the time of appearance, and the length of period of evolution.

LIST OF SPECIES.

Lyctus striatus.*
Anthaxia viridifrons, April 10th.
Agrilus eugenus, April 21st.
 ———, probably n. sp., April 8th.
Phyllobænus dislocatus.
Chariessa pilosa, April 16th.
Sinoxylon basillare.
Heterachthes quadrimaculatus.
Phyton pallidum, May 20th.
Molorchus bimaculatus.
Cyllene picta.*
Neoclytus erythrocephalus.
Tillomorpha geminata.
Acanthoderes quadrigibbus.
Liopus cinereus, April 24th.
Ecyrus dasycerus, April 21st.
Saperda discoidea.
Oncideres cingulatus.
*Dysphaga tenuipes** (fide Haldeman).
Tribolium, n. sp., March.
Læmosaccus plagiatus, April and August.
Xyleborus celsus.
Thysanoeës fimbicornis, April and May.
Chramesus hicornæ, April and May.

FOOD HABITS OF THE LONGICORN BEETLES OR WOOD BORERS.

BY THE EDITOR.

Among the vast number of insects injurious to our forests, shade and fruit trees, none hold a more prominent position than the Longhorns or Longicorns (*Cerambycidae*). The larvæ or grubs of these beetles bore into the wood of various trees, shrubs and ligneous plants, some species confining themselves to one species of tree, while others take a wider range and attack several, or work indiscriminately in all the species of a genus.

* Canadian Entomologist, 1880, 138.

The habits of all our species will not be discovered for many years to come, but as a working basis to guide future observers, we have thought it would be well to recapitulate in the columns of the AMERICAN ENTOMOLOGIST what is already known regarding the habits of this family in North America. We will do this as briefly as possible, arranging the species in the order of their more recent classification, merely prefacing by the following explanations:

Where the habit is well known and has been repeatedly recorded and testified to we simply give the first authority where the facts are mentioned, quoting subsequent authorities only when a difference in habit is noted.

Unpublished observations are indicated by the name of the observer only.

The abbreviations are few and as follows:

Am. Ent.—American Entomologist.

Am. Nat.—American Naturalist.

Harris—A treatise on some of the insects injurious to vegetation, by Thaddeus William Harris, M. D., edited by C. L. Flint.

Prac. Ent.—Practical Entomologist.

Can. Ent.—Canadian Entomologist.

We shall be pleased to publish any further experience from the readers of the ENTOMOLOGIST that will serve to complete the summary here given, and we tender our thanks to Drs. Le Conte and Horn, Mr. Schwarz, Mr. Fuller, and others, for notes and references that have helped to complete the list.

PRIONIDÆ.

Ergates spiculatus (Lec.), bores in *Pinus ponderosa* in Colorado, (A. S. Fuller).

Mallodon dasystemus (Say), boring in Live Oak, Hackberry, Pecan, attacking trees in healthy condition and often greatly injuring them, but preferring trees which have already suffered from one or another cause. The perfect insect issuing from April till August, in Florida and Texas (E. A. Schwarz).

Mallodon melanopus (Linn.), breeds in the Box Elder (*Acer negundo*)—E. G. Mumford, Bell Co., Texas; (auctore A. S. Fuller); boring in the roots of oak shrubs at Cedar Keys, Fla., the beetle appearing in June; boring in *Celtis Texana* near Columbus, Texas (E. A. Schwarz).

Mallodon serrulatus (Lec.), boring in *Celtis texana*, Columbus, Texas, the perfect insect appearing in July (E. A. Schwarz).

Orthosoma brunneum (Forst.), "inhabits pine trees" (Harris p. 96). "The larvæ which I suppose to be this species is common under the bark of pinelogs" (Fitch, 4th Rep., p. 28).

Prionus laticollis (Drury). The larvæ live in the trunks and roots of the Balm of Gilead, Lombardy Poplar, and probably in those of other kinds of poplar also (Harris, p. 96); in roots of grape vine and apple trees, (C. V. Riley, 2nd Missouri Report, pp. 87-88); in decaying oak stumps (C. V. Riley, *l.c.*, p. 91).

Prionus imbricornis (Linn.), larva infesting grape roots; feeding upon the roots of herbaceous plants (C. V. Riley, 2nd Missouri Rep., p. 89-91); in roots of pear trees (C. V. Riley).

Tragosoma Harrisii (Lec.). Fitch infers that it breeds in the Pine (8th Rep., p. 29); larva in decaying stumps of pine trees near Marquette, Mich., the perfect insect appearing at the beginning of August (E. A. Schwarz).

CERAMBYCIDÆ.

Asemum moestum (Hald.), "found in all stages under the bark of oaks early in May" (Packard, p. 496); boring in grape vine according to Dr. Shimer (Packard, *ib.*); bred from Scotch Pine (C. V. Riley); pupa found under bark of pine stumps near Tallahassee, Fla., in March (E. A. Schwarz).

Crioccephalus nubilus (Lec.), larva boring in roots of Yellow Pine which had been laid open by a newly made ditch, Tampa, Fla.; the perfect insect appearing in April (E. A. Schwarz).

Smodicum cucujiforme (Say), larva boring under dry bark of Live Oak (Fla.), Beech (Mich.), and Hackberry (Texas) (E. A. Schwarz).

Dularius brevilineus (Say), boring in dry elm wood. "It lives in dry as well as dead elm, but usually in such trees as are partly dead" (Am. Ent., I, p. 228).

Hylotrupes bajulus (Linn.), inhabits fir, spruce and hemlock wood and lumber (Harris, p. 100); "on dying Arbor-vitæ in May in Washington, D. C. (C. V. Riley).

Hylotrupes ligneus (Fabr.), boring in sap wood of Red Cedar, Manhattan, Kan. (C. V. Riley).

Phymatodes variabilis (Linn.). "The larva of this insect may be found in early Spring, under the bark of White Oak logs and stumps" (Horn. Proc. Ent. Soc., Phil., I, p. 30); boring in the hoops of powder barrels (Am. Nat., 1879, p. 262).

Phymatodes varius (Fabr.), is found with *Callidium variabile* (Horn. Proc. Ent. Soc., Phil., I, p. 30); "is probably an oak borer, specimens having been found in the trunk of a Black Oak" (Fitch 5th Rep., p. 13); "from oak wood in all probability" (C. V. Riley).

Phymatodes amoenus (Say), boring in dead wood of Isabella and Clinton grape vines (Shimer Proc. Am. Ent., Soc. II, p. 9).

Callidium antennatum (Newm.), larvæ mostly just under bark of pines. "Just before they are about to be transformed, they bore into the solid wood to the depth of several inches" (Harris, pp. 100-101); bores in pine wood and in Red Cedar, mining under the bark (Packard, Guide, p. 496); "the larva living in the trunks of pines, excavating a wavy shallow track under the bark, which is packed full of sawdust, and when almost

- fully grown, sinking itself obliquely downward several inches into the wood, to repose during its pupa state" (Fitch, 4th Rep., p. 27).
- Dryobius 6-fasciatus* (Say), found on the same situation as *Saperda lateralis* in the common Elm (Fitch, 5th Rep., p. 61); on Beech (C. G. Siewers).
- Chion cinctus* (Drury), inhabits the Hickory, in its larva state forming long galleries in the trunk of this tree in the direction of the fibres of the wood (Harris, p. 97); boring in the trunks of apple tree (Fitch, 3d Rep., p. 8); in Hickory after it is felled (Walsh Prac. Ent. pp. 30-31).
- Eburia 4-geminata* (Say), boring in honey-locust timber (Walsh Prac. Ent., II, p. 69).
- Elaphidion atomarium* (Drury), boring in dry twigs of *Quercus virens* and in the dry leaf-stems of *Chamaerops palmetto* in Florida; boring in healthy Hackberry trees in Texas (E. A. Schwarz).
- Elaphidion mucronatum* (Fabr.). As the preceding (Schwarz); in large limbs of wild grape vines (C. V. Riley).
- Elaphidion inermis* (Newm.). The perfect insect cut from dry twigs of *Quercus virens*, Enterprise, Fla., June (E. A. Schwarz).
- Elaphidion villosus* (Fabr.), the well known "oak pruner." Its habits were first made public by Prof. Peck, (Mass. Agric. Repository and Journal, vol. v, 1819) and are often referred to by entomological writers. In *Quercus*, *Carya* and *Castanea*, also in *Abies* (Haldeman, Trans. Am. Phil. Soc., x, 1487, p. 34). It does not only attack Black and White Oak, but has also been observed boring in Plum and Apple twigs, and in dry grape cane (C. V. Riley).
- Elaphidion parallelum* (Newm.), boring in Plum twigs (Am. Ent., I, p. 187); boring in Oak, dry grape cane and Apple twigs (C. V. Riley).
- Elaphidion irroratum* (Fabr.), boring in the trunk of the Black Mangrove, Indian River, Florida (H. G. Hubbard).
- Tylonotus bimaculatus* (Hald.), "found under bark of Tulip-poplar" (Bland Proc. Ent. Soc., Phil., I, 95); in Black Ash (A. S. Fuller); in *Fraxinus* (Haldemann, Trans. Am. Phil. Soc., x, 38).
- Callichroma splendidum* (Lec.), breeds in the timber, and the beetles feed upon the flowers of "Gum elastic tree"* (W. H. Williams, Galveston Co., Texas, teste A. S. Fuller).
- Megaderus bifasciatus* (Dup.). Taken from Cedar timber in the month of December (John A. Friebele, Comal Co., Texas, teste A. S. Fuller).
- Tragidion fulvipenne* (Say), bores in oak (Am. Ent., p. 80).
- Stenosphenus notatus* (Oliv.). A specimen was cut from a Hickory tree in March (C. V. Riley).
- Cyllene pictus* (Drury), is the well known hickory borer; attacks also Pecan and Butternut (C. V. Riley).
- Cyllene robinia* (Forst.), equally well known as the Locust-tree borer.
- Cyllene antennatus* White, "lives in the Mesquit wood," Arizona (Dr. G. H. Horn, Trans. Am. Ent. Soc., viii., p. 135).
- Glycobius speciosus* (Say.), the Sugar-maple borer (Harris, pp. 101-102).
- Arhopalus fulminans* (Fabr.), "excavating a burrow in the soft sap-wood of oak," (Fitch, 5th Rep., p. 13); bores the Red Oak, comes out in June (Dr. F. Hodge, Buffalo, N. Y., teste A. S. Fuller).
- Xylotrechus colonus* (Fabr.), "bred from oak" (C. V. Riley).
- Neoclytus caprea* (Say). "The larva of this species bores in the Ash" (C. Thomas, 6th Ills. Ent. Rep., p. 151); breeds in the White Ash, preferring fallen trees, coming out early in spring (Dr. F. Hodge, Buffalo, N. Y., teste A. S. Fuller); boring in felled Elm and Hickory trees (C. V. Riley).
- Neoclytus erythrocephalus* (Fabr.), raised from Hickory wood (Dr. G. H. Horn, Proc. Ent. Soc., Phil., I, p. 29); boring in dead Elm (H. G. Hubbard, Detroit, Mich., teste C. V. Riley); a gravid female found near the root of a rose bush in Washington, D. C. (C. V. Riley).
- Cyrtophorus verrucosus* (Oliv.), obtained numbers from dead quince bushes, working near the roots (Dr. F. Hodge, Buffalo, N. Y., teste A. S. Fuller).
- Zagymnus clerinus* (Lec.), bores in the dry leaf stems of *Chamaerops palmetto*, in Florida, the beetles appearing in April and May (E. A. Schwarz).
- Desmocerus palliatus* (Forst.). "The larva live in the lower part of the stems of the Elder, and devour the pith" (Harris, p. 115).
- Desmocerus auripennis*, lives on the Elder of the Pacific (Dr. G. H. Horn).
- Ulochates leoninus* (Lec.). "A pupa and a perfect insect found under pine bark at Fort Crook, Cal." (Dr. G. H. Horn, Proc. Ent. Soc., Phil., VI, p. 293).
- Rhagium lineatum* (Oliv.). "The larva live between the bark and the wood of the Pitch Pine, often in great numbers together, and, when they are about to become pupæ, each one surrounds itself with an oval ring of woody fibres, within which it undergoes its transformations. The beetle is matured before winter, but does not leave the tree until spring" (Harris p. 116).
- Leptura zebra* (Oliv.). "The larva and pupa inhabit the Black Oak" (Dr. G. H. Horn, Proc. Ent. Soc., Phil., I, p. 30).

(To be continued.)

REPELLING FLIES.—I manage to keep flies out of my stable by removing the droppings several times a day, and sprinkling very slightly the floor of the stable with kerosene. I have a tin can with a cork in it, through which is pierced a small hole; through this I drop the kerosene. A pint will last over a week, and seems to be quite objectionable to flies of all kinds. —Wm. Horne, V. S., in *Country Gentleman*.

* This name is applied to a species of *Nyssa*.